

California's Flood Future

Recommendations for
Managing the State's Flood Risk

Briefing for
Sacramento River Region

Sacramento Public Library
828 I Street, Sacramento
Sacramento, CA 95814
15 April 2013

Agenda

- Introductions
- *California's Flood Future* Presentation
- Break
- Recommendations Discussion
- Questions & Answers
- Closing Remarks



Introduction

Report Purpose

- Increase understanding of statewide flood problem
- Make recommendations for managing flood risk
- Inform decisions about:
 - Policies
 - Financial investments



California's Flood Future: Release Schedule

- Public Drafts Released on April 3:

- Released draft Highlights, Flood Future Report with technical memoranda
- Participated in media events

- April-May:

- 9 regional meetings statewide



Introduction

DWR Flood Planning

- Central Valley
 - CVFPP
- Statewide
 - Flood Future Report
- California Water Plan



Introduction USACE

South Pacific Division Flood Plain Management Services Authority Program

- Compile/share flood hazard information
- Provide technical and planning advice

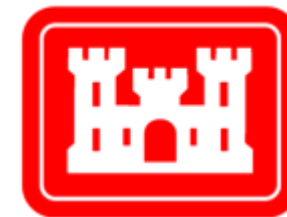
USACE Participation does not include:

- Advocating for taxpayer funding
- Advocating for additional USACE authority

Consistent with USACE Civil Works Strategic Plan 2011-2015



Flood Future Report Process



**US Army Corps
of Engineers ®**

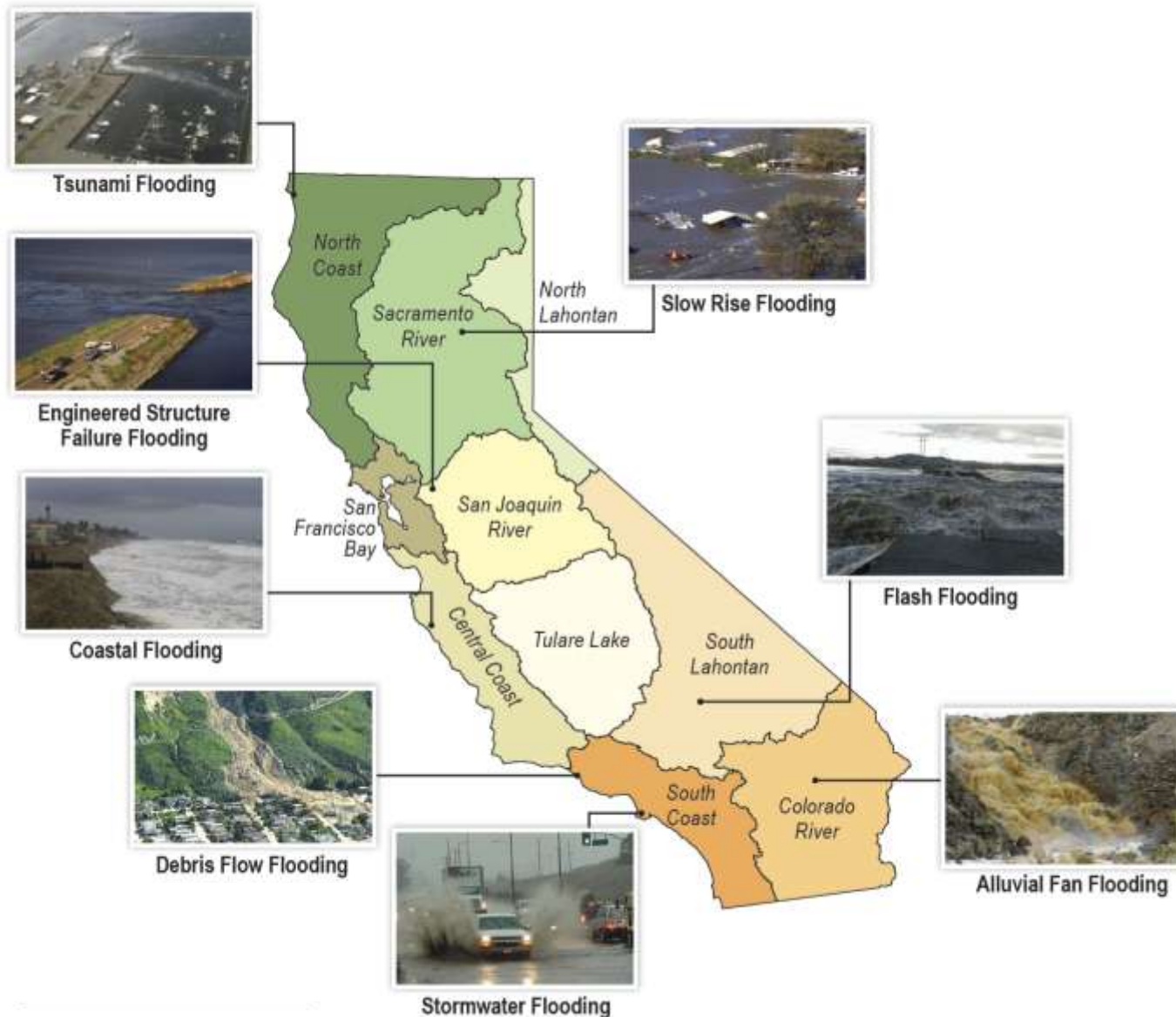
California is at risk for catastrophic flooding!

- Devastating impacts to California and the nation
- 1 in 5 Californians are exposed to flooding
- \$580B in assets are exposed to flooding
- Every county has experienced a Federally declared flood disaster in the last 20 years



The Problem

California experiences many types of flooding



Flood risk is defined using these factors:



Hazard

What causes harm?



Performance

How will the system react?



Exposure

Who and what can be harmed?



Vulnerability

How susceptible to harm?



Consequence

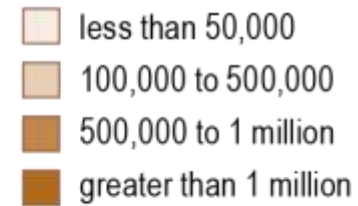
How much harm?

Inundation Risk

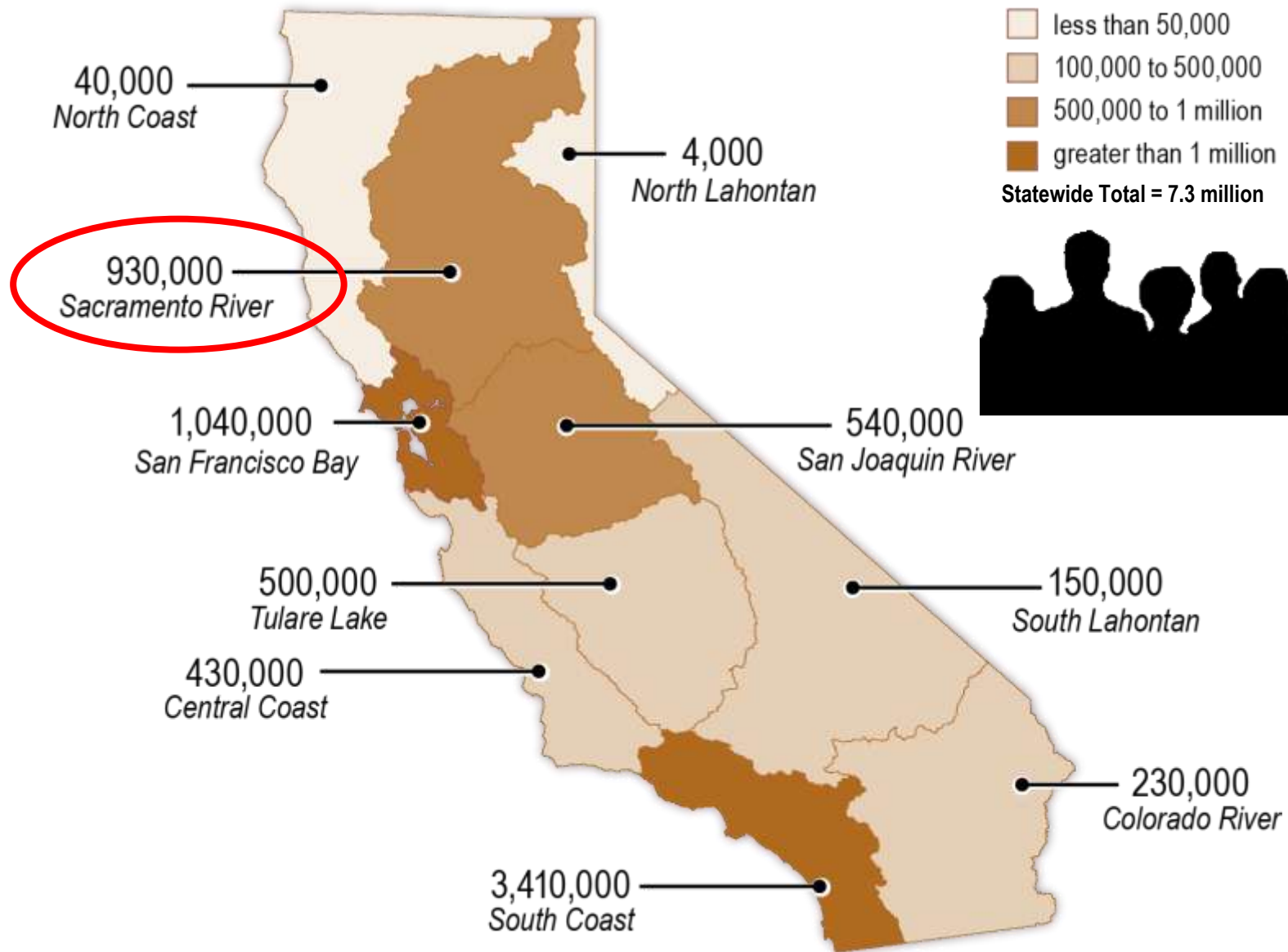
Likelihood and severity
of adverse
consequences

7.3 million Californians live in floodplains

Number of People in Floodplain



Statewide Total = 7.3 million



7.3 million Californians live in floodplains

Number of People in Floodplain

- less than 50,000
- 100,000 to 500,000
- 500,000 to 1 million
- greater than 1 million

Statewide Total = 7.3 million

Exposed Population (Millions)

0.6
0.4
0.2
0.0

Sacramento

San Joaquin

Sutter

00
n River

150,000
South Lahontan

230,000
Colorado River

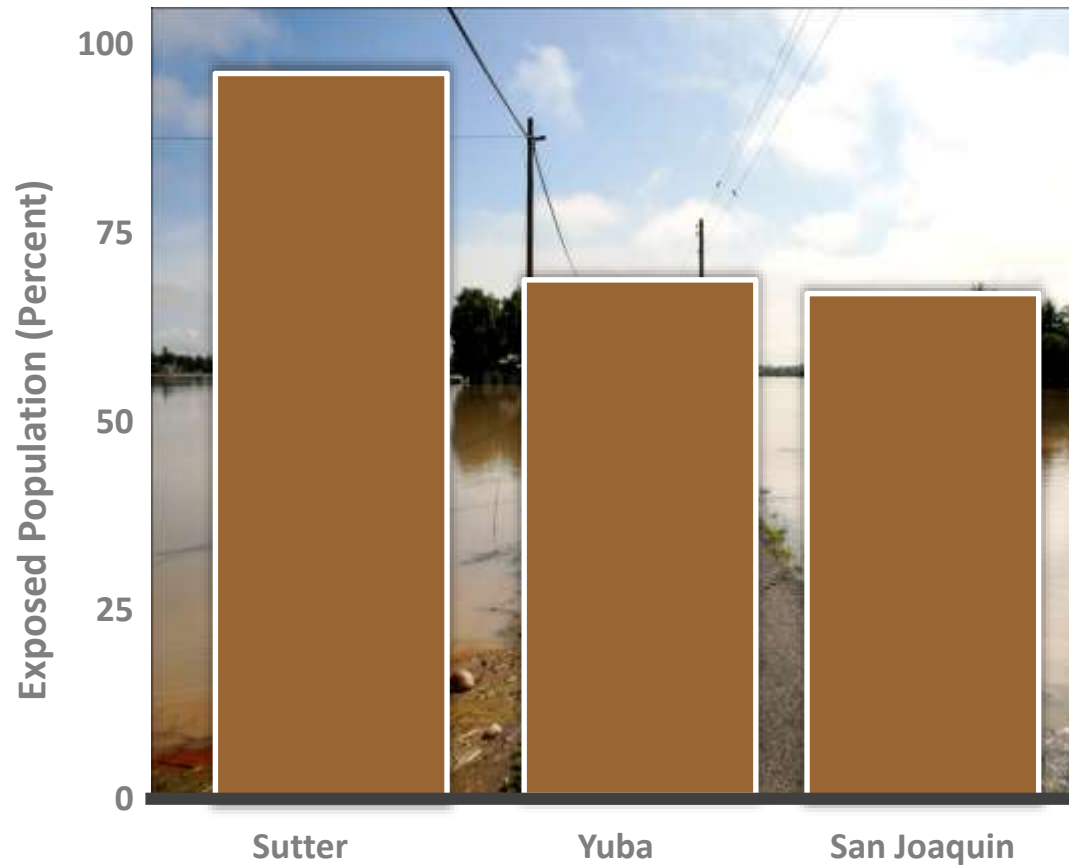
South Coast

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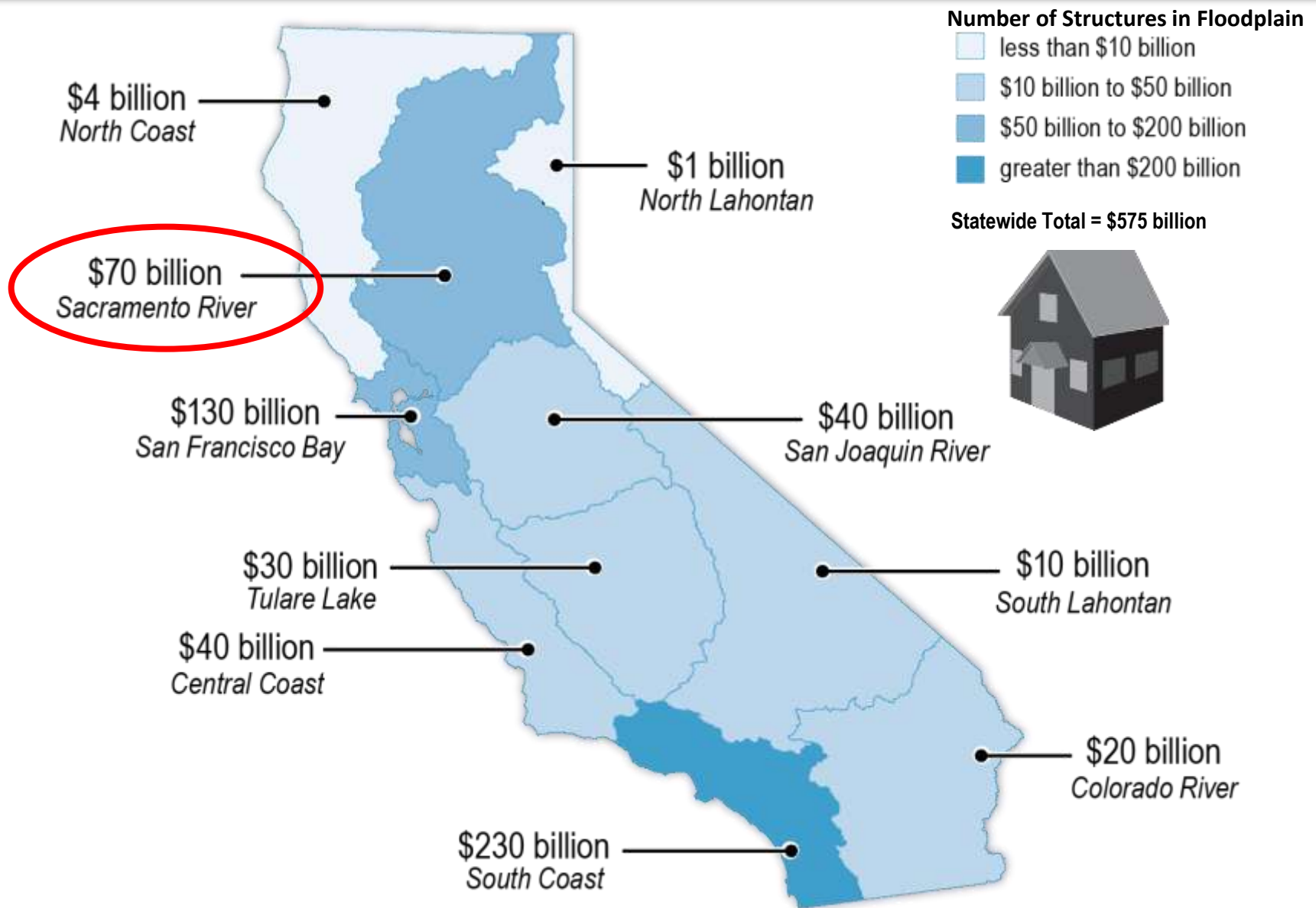
100
n River

150,000
South Lahontan

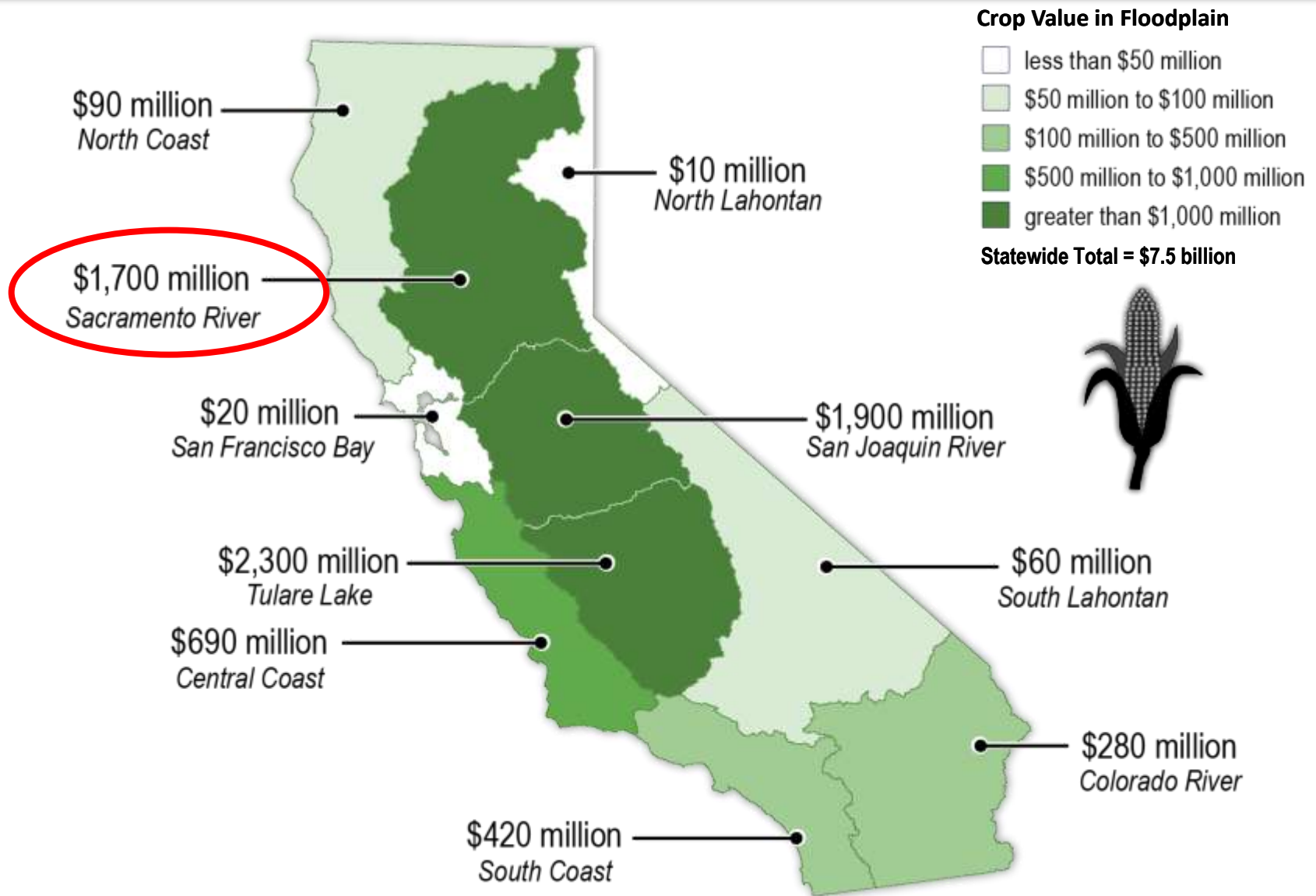
230,000
Colorado River

South Coast

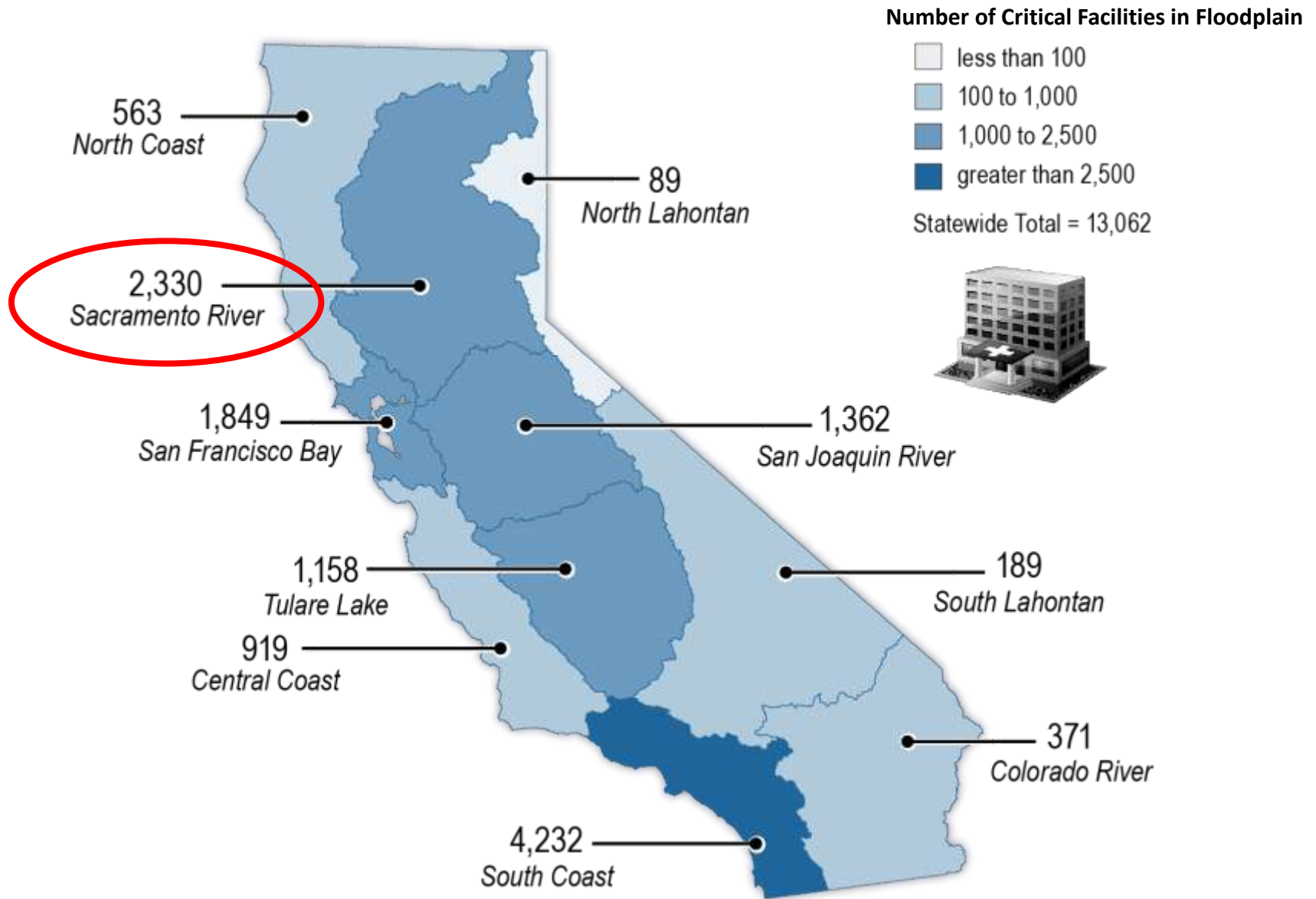
\$575 billion in structures are at risk



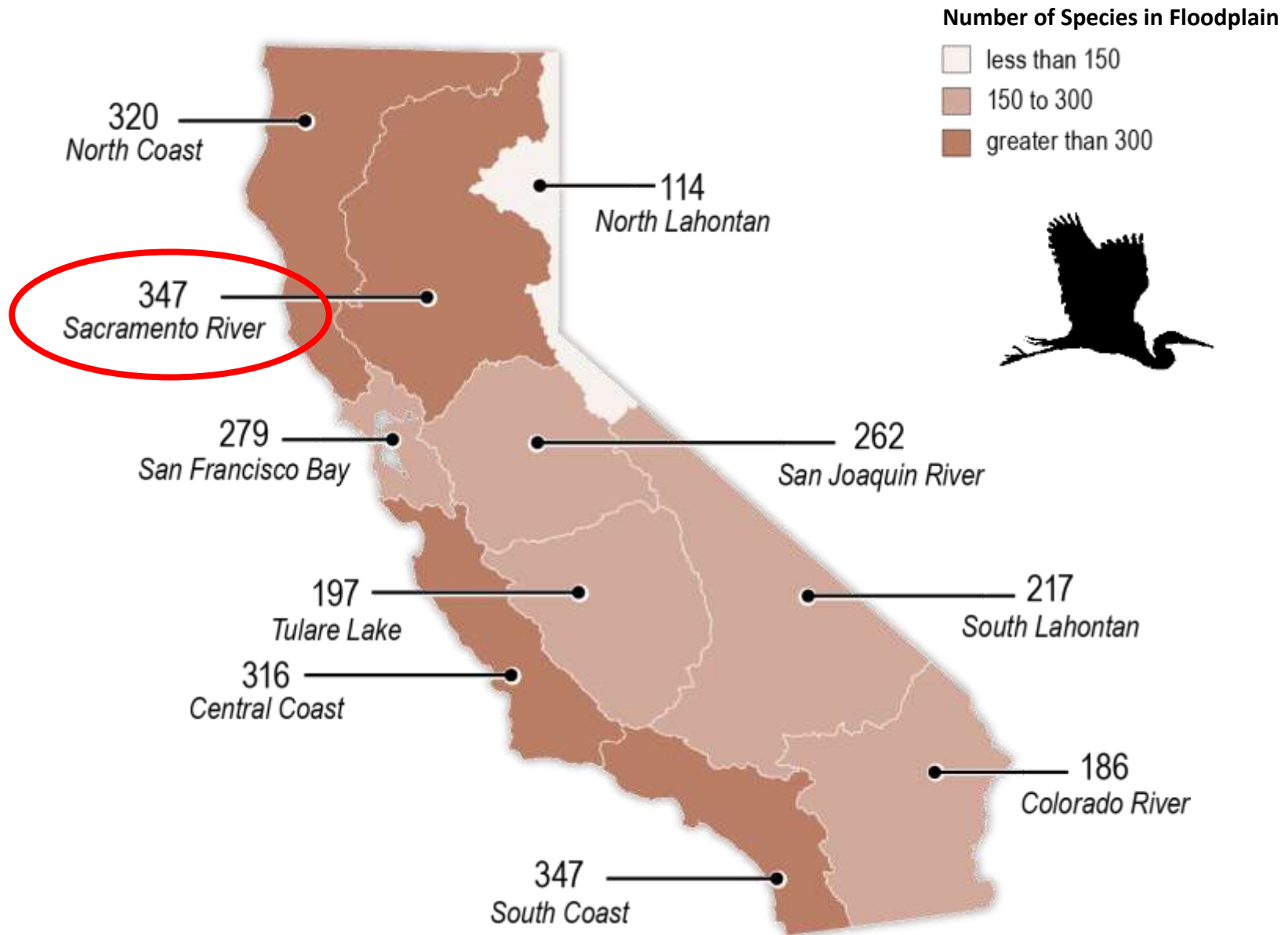
California's agricultural economy is at risk



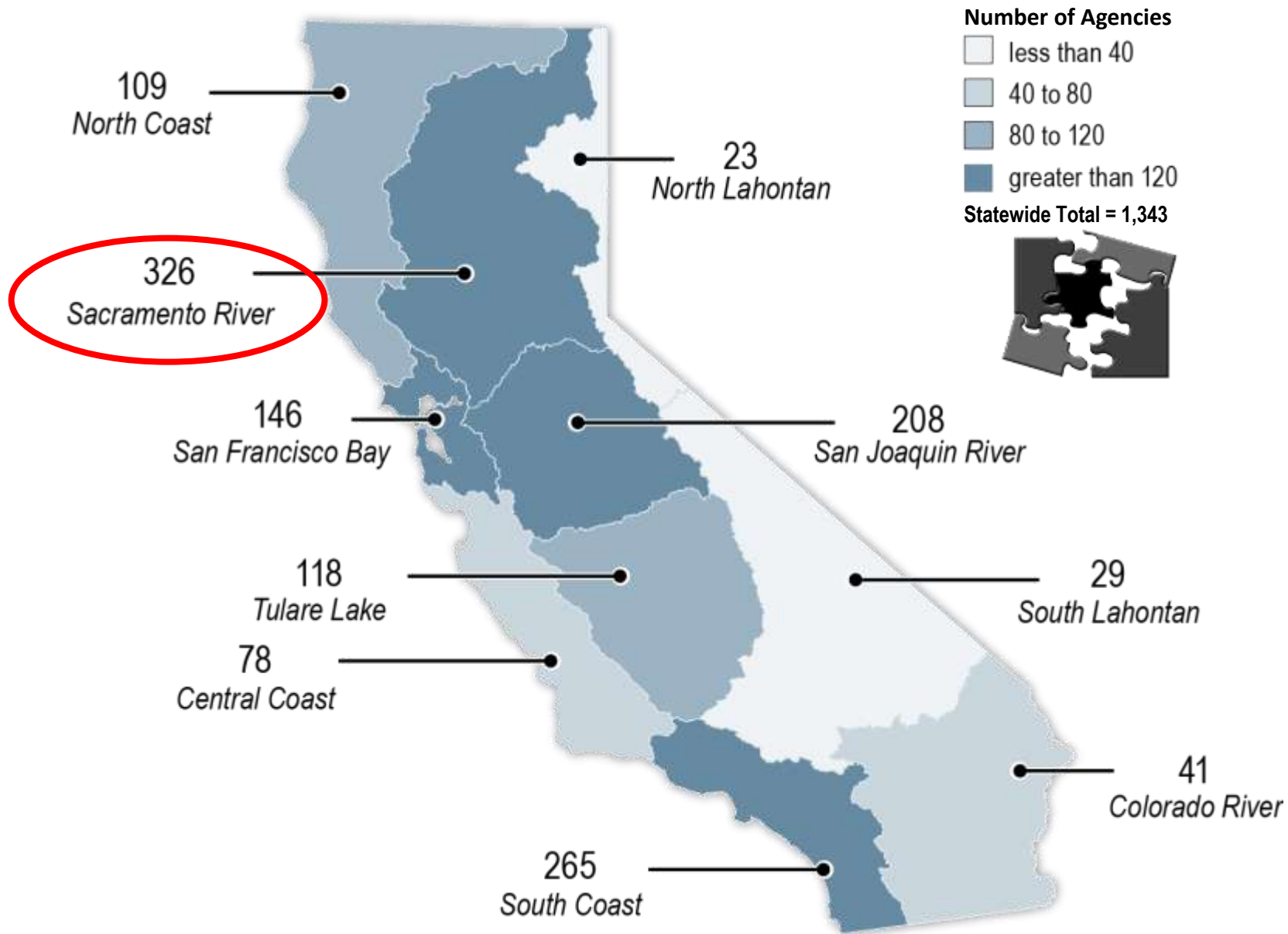
Critical facilities are at risk



Floodplains are rich in environmental resources

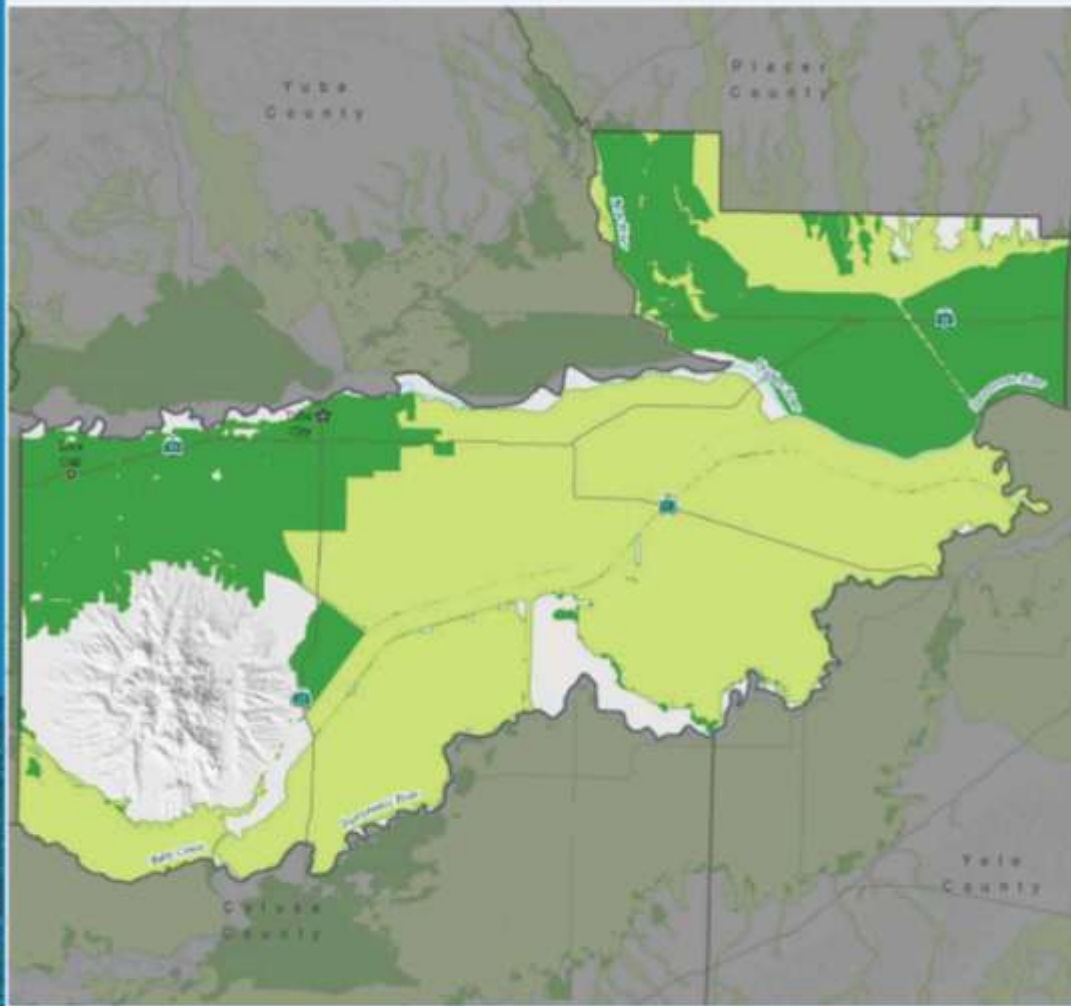


Flood management authority is complex and fragmented



County mapbook example

100-year and 500-year Floodplains



Selected Flood Events by Event Year

1881-1882 Winter, The Great Flood
1900-1951 November-January
1956-1956 1956 Christmas Flood
1958 February-April
1962 October
1962-1963 December-February
1964-1965 December-January, Northern California Christmas 1964 Disaster
1971 June-August
1973 January-April
1982-1983 December-March, Winter Storms
1996 February, Yuba River - Linda
1996 January-March, Severe Winter Storms, Sacramento River Basin
1996-1997 December-January
2006 February 3
2006 January 5-14, Winter Storms

Flood Hazard Exposure

County Statistics

Total Acreage:	389,310
Total Population:	78,827
Total Structures:	29,500
Total Value of Structures and Contents:	\$7.3 billion
Total Agricultural Acreage:	262,471
Total Value of Crops:	\$394.2 million

Summary of Exposure to Flood Hazard Reported by County

	100-yr Event	500-yr Event
Exposed Area (acres)	194,902	306,438
Percent of Area Exposed	50	79
Population Exposed	6,175	74,432
Percent of Population Exposed	8	94
Structures Exposed	2,152	26,158
Total Depreciated Replacement Value of Exposed Structures and Contents	\$405.7 million	\$5.1 billion
Exposed Crops (acres)	164,273	256,273
Value of Exposed Crops	\$210.8 million	\$343.2 million
Department of Defense Facilities Exposed	0	9
Essential Facilities Exposed	0	56
High Potential Loss Facilities Exposed	1	2
Lifeline Utilities Exposed	3	7
Transportation Facilities Exposed	51	96
Transportation Segments Exposed (miles)	57	127
Native American Tribal Land Exposed (acres)	0	0
Total Sensitive Plant Species Exposed	6	9
Total Sensitive Animal Species Exposed	16	21

Sutter County

Types of Flooding

Likely:	Present:
Slow Rise	Debris Flow
Flash	Engineered Structure Failure
Stormwater	

Hydrologic Regions



Figure D-101

Summary of Available Flood Types, Flood History, and Flood Hazard Exposure, Sutter County

DRAFT

Mar 22, 2013



STATEWIDE FLOOD MANAGEMENT PLANNING PROGRAM



Local agencies speak out

- Inadequate data
- Limited understanding
- Emergency management coordination
- Inconsistent land use planning
- Fragmented responsibility
- Conflicting permit requirements
- Unstable funding

NORTH LAHONTAN • Alpine County • Lassen County • City of Susanville • Susanville Rancheria • **NORTH COAST** • Blue Lake Rancheria • Caltrans Region • City of Arcata • City of Eureka • Crescent City • Crescent City Harbor • Del Norte Flood Control District • Hoopa Valley Tribe Office of Emergency Services (OES) • Humboldt Bay Municipal Water District • Humboldt County Public Works Department • Mendocino County Water Agency • Siskiyou County • Smith River Rancheria • Sonoma County Water Agency (Beta Test) • Town of McCloud • Trinidad Rancheria • Trinity County Planning Department • Trinity River Restoration Program • Yurok Tribe • **SACRAMENTO RIVER** • American River Flood Control District • Butte County Public Works • Central Modoc Resource Conservation District • City of Atenas • City of Chico • City of Corning • City of Orland • City of Red Bluff • City of Sacramento • City of West Sacramento • City of Willows • City of Woodland • Colusa Basin Drainage District • Colusa County Public Works • El Dorado County • Feather River Coordinated Resource Management • Gerber/Las Flores CSD • Glenn Colusa Irrigation District • Glenn County Public Works • Knights Landing • Ridge Drainage District • Lake County Flood Control and Water Conservation District • M & T Ranch • Modoc County • Nevada County • Placer County Flood Control and Water Conservation District • Plumas County Flood Control and Water Conservation District • Plumas County Public Works • Reclamation District 10 • Sacramento Area Flood Control Agency • Sacramento County Department of Water Resources • Sacramento River West Side Levee District • Shasta County Water Agency • Sierra County • Sutter Butte Flood Control Agency • Sutter County • Tehama County Flood Control and Water Conservation District • Three Rivers Levee Improvement Authority • West Sacramento Flood Control Agency • Yolo County • Yolo County Service Area No. 6 • Yolo County Flood Control and Water Conservation District • Yuba County Public Works • Yuba County Water Agency • **SAN FRANCISCO BAY** • Alameda County • Zone 7 • Alameda County Flood Control and Water Conservation District • Bethel Island Municipal Improvement District • City and County of San Francisco • City of Corte Madera • City of Mill Valley • City of Novato • City of San Rafael • City of Sausalito • City of Tiburon • Contra Costa Flood Control and Water Conservation District • Marin County Flood Control and Water Conservation District • Napa County Flood Control and Water Conservation District • Reclamation District 2068 • San Francisco Department of Public Works • San Francisco Creek Joint Powers Authority • San Mateo County • Santa Clara Valley Water District • Solano County Water Agency • **CENTRAL COAST** • Monterey County Water Resources Agency • San Benito Water District • San Luis Obispo County Flood Control and Water Conservation District • Santa Barbara Flood Control and Water Conservation District • Santa Cruz County Flood Control and Water Conservation District • **SAN JOAQUIN RIVER** • Amador County • Calaveras County • Calaveras County Water District • Lower San Joaquin Levee District • Madera County Flood Control and Water Conservation District • Merced County • Merced County Public Works • Merced Irrigation District • San Joaquin Area Flood Control Agency • San Joaquin County Flood Control and Water Conservation District • Stanislaus County Public Works • Stockton-East Water District • Tuolumne County • Turlock Irrigation District • **SOUTH LAHONTAN** • Inyo County • Mono County • Town of Mammoth Lakes • **TULARE LAKE** • City of Bakersfield • County of Kern • Fresno County Public Works • Fresno Irrigation District • Fresno Metropolitan Flood Control District • Indian Wells Valley Watershed Coordinator/Eastern Kern County Resource Conservation District • Kern County Water Agency • Kern Delta Water District • Kings County • Kings River Conservation District • North Kern Water Storage District • Semitropic Water Storage District • Tulare County Flood Control District • **SOUTH COAST** • City of Chula Vista • City of Coronado • City of El Cajon • City of Imperial Beach • City of Lancaster • City of Los Angeles • City of Oceanside • City of Palmdale • City of San Diego • City of San Diego Storm Water Division • City of Vista • Los Angeles County Department of Public Works • Orange County Public Works • San Bernardino County Department of Public Works • San Diego County Flood Control District • Santa Ana River Flood Protection Agency • Ventura County Public Works • Ventura County Watershed Protection District • **COLORADO RIVER** • Coachella Valley Water District • Imperial County • Imperial Irrigation District • Riverside County Flood Control and Water Conservation District

Flood infrastructure does not meet current and future needs

- 800+ projects identified statewide
- \$30-\$50+ billion in improvements and projects
- Will not provide protection from a 100-year flood statewide



Flood funding is limited and unreliable

- Inconsistent and insufficient funding
- Declining local resources
- Reduced Federal cost shares
- Challenging revenue structure
- Cost of flood management misunderstood by public and policy makers



The Solution

Solutions must use an “Integrated Water Management” approach

- Combines flood management, water supply, and ecosystem actions
- Regional and systemwide approach
- Collaboration and cooperation
- Array of funding sources



Recommendation

1. Conduct regional flood risk assessments to better understand statewide flood risk.



Recommendations

2. Increase public and policymaker awareness about flood risks to facilitate informed decisions.
3. Increase support for flood emergency preparedness, response, and recovery programs to reduce flood impacts.



Recommendations

PLANS

4. Encourage land-use planning practices that reduce the consequences of flooding.
5. Conduct flood management from regional, systemwide, and statewide perspectives to provide multiple benefits.



Recommendations

6. Increase collaboration among public agencies to improve flood management planning, policies, and investments.
7. Establish sufficient and stable funding mechanisms to reduce flood risk.



We Must Take Action. Now.

California's future depends on:

- Local, State, Federal, and tribal agencies working together
- Implement policies and projects using an IWM approach
- Increase awareness of the cost and consequences of flooding
- Establish investment priorities and sufficient and stable funding
- Short-term and long-term action and solutions

SFMP Website

For More Information about
California's Flood Future :
<http://www.water.ca.gov/SFMP>



One In Five Californians Are Exposed To Flooding

Over the last 60 years, California has experienced more than 30 major flood events, resulting in more than 300 lives lost, more than 750 injuries and billions of dollars in disaster claims.

Today, more than 7 million Californians, or one in five, live in the 500-year floodplain, and approximately \$580 billion in assets (crops, structures, and public infrastructure) are exposed to flooding. This estimate does not include the impacts of future development, population changes, climate change, or costs due to loss of major infrastructure and critical facilities, as well as losses to State commerce.

With many more structures per square mile in our urban areas, California would likely see much higher recovery costs from a major storm than the \$110 billion that has been spent on recovery from Hurricanes Katrina and Rita.

Flood disasters are an unfortunate reality in California, which is why DWR's Statewide Flood Management Planning (SFMP) program works with organizations across the State to develop flood management policies and guide financial investments to protect people and property from flooding.

The newly released public review draft of *California's Flood Future: Recommendations for Managing the State's Flood Risk* report, developed in partnership with the U.S. Army Corps of Engineers, is a comprehensive look at flooding throughout the State and makes recommendations for future actions to reduce flood risk.

DWR is accepting written comments on the public review draft of *California's Flood Future: Recommendations for Managing the State's Flood Risk* until 5 p.m. on Monday, May 20, 2013. Comments may be submitted electronically by sending them to sfmp@water.ca.gov or provided at any of the scheduled regional workshops.

California's Flood Future was developed as a companion plan to the California Water Plan Update 2013. To learn more about how *California's Flood Future* findings and recommendations are used, visit *Flood in California Water Plan*.



California's Flood Future:

The public review draft of
*California's Flood Future:
Recommendations for
Managing the State's Flood Risk*
is available now. [Download](#)

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- ▶ FLOOD FUTURE REPORT
- ▶ FLOOD IN CALIFORNIA WATER PLAN
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ANNOUNCEMENTS

FFR Public Review Draft Available

DWR released the public review draft of *California's Flood Future: Recommendations for Managing the State's Flood Risk* on April 3, 2013. Comments may be submitted in writing using the comment form via sfmp@water.ca.gov or at any of the scheduled regional workshops until 5 p.m. on Monday, May 20, 2013.

Regional Workshops Scheduled

DWR is holding a series of *California's Flood Future* Statewide Meetings in April and May 2013 to discuss the findings of the public review draft report. View the full workshop calendar.

Questions

Recommendations

1 Conduct regional flood risk assessments to understand statewide flood risk

STOP

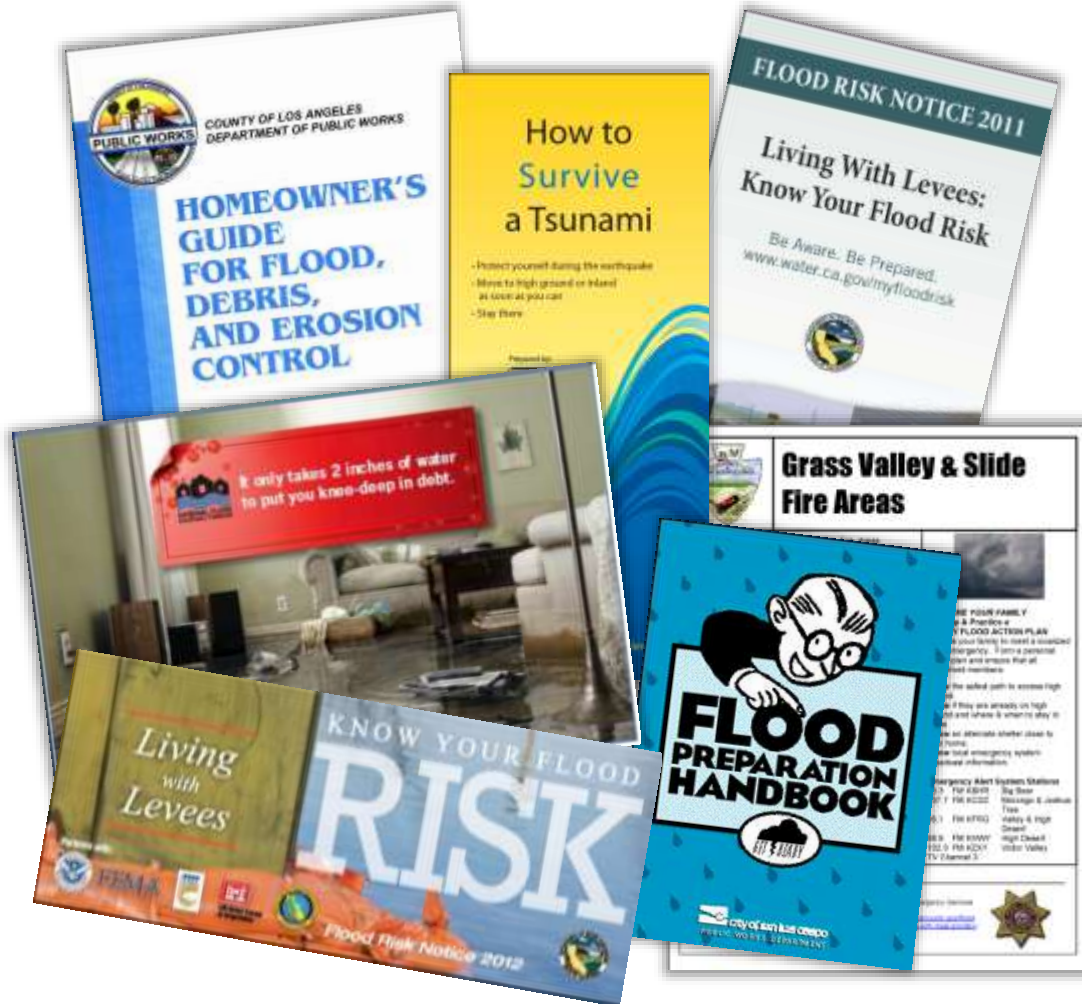
- Identify methods for and conduct regional flood risk
- Set regional flood risk reduction goals
- Identify opportunities to maintain natural systems
- Assess climate change and sea level rise impacts



2 Increase public and policymaker awareness about flood risks to facilitate informed decisions

TOOLS

- Develop consistent messaging
- Provide outreach materials
- Share data and information



3 Increase support for flood emergency preparedness, response, and recovery programs to reduce flood impacts

STOPS

- Provide increased flood readiness funding
- Develop or improve Flood Emergency Management Plans
- Conduct regular flood emergency exercises
- Identify data/forecasting needs



4

Encourage land-use planning practices that reduce the consequences of flooding

PLANS

- Develop planning principles for development in floodplains
- Facilitate coordination and alignment between planners and emergency managers
- Incentivize best management practices



5

Implement flood management from regional, systemwide, and statewide perspectives to provide multiple benefits

PLANS

- Identify regional flood planning areas
- Prioritize flood management projects
- Improve State and Federal Processes
- Coordinate regional water and flood management
- Link funding to an IWM approach



6 Increase collaboration among public agencies to improve flood management planning, policies, and investments

- Utilize regional working groups
 - *Permits*
 - *Plans*
 - *Implementation*
- Provide funding, grant, and in-kind credit programs
- Prioritize flood management investments



7 Establish sufficient and stable funding mechanisms to reduce flood risk

ACTIONS

- Assess potential funding sources and propose new options
- Facilitate access to funding sources
- Increase funding for priority flood management projects



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<http://www.water.ca.gov/SFMP>



Statewide Flood Meetings

Regional meetings to discuss the report:

April 8 – Marin County

April 9 – Santa Clara County

April 15 – Sacramento County

April 17 – San Diego County

April 18 – Riverside and
Los Angeles Counties

April 19 – Ventura County

May 8 – Fresno County

May 14 – Humboldt County

